

Claims

1. Method for producing parts for passive electronic components according to which:

- a laminated strip (1, 10, 13, 100) is produced which is constituted by at least one stack of a thin and fragile metal strip (2, 21, 210) and a layer of an adhesive material,
- and at least one part (6, 6', 16A, 16B, 16C, 16D; 54; 100) is cut from the laminated strip (1, 10, 13, 100),
- characterised in that the cutting operation is carried out using a method which comprises at least one step involving etching by means of sandblasting.

2. Method according to claim 1, characterised in that the layer of an adhesive material of the at least one stack is a layer (3, 31, 310) of a fragile and hard adhesive material.

3. Method according to claim 1 or claim 2, characterised in that the thin and fragile metal strip of the at least one stack of thin and fragile metal strips and a layer of an adhesive material is constituted by a material selected from the following alloys: nanocrystalline magnetic alloys, fragile magnetic alloys of iron-cobalt, iron-platinum, iron-silicon, iron-nickel, fragile nickel-chromium alloys, fragile molybdenum alloys and fragile tungsten alloys.

4. Method according to any one of claims 1 to 3, characterised in that, in order to carry out at least one step involving etching by means of sandblasting, there is arranged, on a face of the laminated strip (1, 10, 13, 100), a cover (4, 14, 40, 400) composed of a material which is resistant to sandblasting, comprising at least one opening (7,

17, 70, 700) having at least one shape according to which it is desirable to etch the at least one laminated strip.

5. Method according to claim 4, characterised in that the cover (4, 14, 40, 400) is a steel strip which is resistant to etching by means of sandblasting.

6. Method according to claim 4, characterised in that the cover (4, 14, 40, 400) is constituted by a resilient layer.

7. Method according to claim 6, characterised in that the resilient layer is a layer of paint deposited by means of serigraphy.

8. Method according to claim 6, characterised in that the resilient layer is a layer of resilient photosensitive resin which is exposed to light radiation through a mask which comprises appropriate cut-outs, and which is developed by means of immersion in a bath before etching by means of sandblasting.

9. Method according to any one of claims 1 to 8, characterised in that the laminated strip (10, 100) is constituted by at least two alternate stacks (11, 12, 110, 120) of thin metal strips and layers of a fragile and hard adhesive material, the at least two alternate stacks being superimposed and separated by means of an adhesive layer (33, 330), at least a portion of which is constituted by a resilient material which is resistant to etching by means of sandblasting.

10. Method according to any one of claims 1 to 9, characterised in that, in order to carry out etching by means

of sandblasting, the laminated strip (1, 10, 13, 100) is adhesively-bonded to a support strip or plate (5, 15, 50, 51, 500).

11. Method according to claim 10, characterised in that, after cutting by sandblasting, the cut laminated strip (13) and the support strip (15) are separated.

12. Method according to claim 10 or 11, characterised in that, in order to carry out the etching by means of sandblasting, the laminated strip is placed so as to be arranged on the support strip in a sandblasting etching chamber comprising at least one sandblasting nozzle which projects a jet of abrasive particles and a relative movement of the laminated strip and the at least one sandblasting nozzle is carried out in order to pass over the surface of the laminated strip with the jet of abrasive particles.

13. Method according to any one of claims 1 to 12, characterised in that a plurality of parts (16A, 16B, 16C and 16D) for electronic components which are connected to each other by means of attachment points (19A, 19B, 19C and 19D) are etched on the laminated strip (13, 13'), and in that the various parts are separated after etching.

14. Method according to any one of claims 1 to 13, characterised in that the fragile and hard material is an epoxy adhesive.

15. Method according to claim 10, characterised in that the support strip is a strip comprising a layer (52) of polymer and a layer (53) of conductive material such as copper.

16. Method according to claim 15, characterised in that the support strip (51) further comprises, before cutting by means of sandblasting, at least one electronic component which is protected during the sandblasting cutting operation by means of a layer of resilient material.

17. Part which can be produced by the method according to any one of claims 1 to 14, characterised in that it is a core of a passive inductive electronic component.

18. Part according to claim 17, characterised in that it comprises an air gap.

19. Part according to claim 17 or claim 18, characterised in that it is a torus having a thickness of less than 1 mm.

20. Part according to claim 17 or claim 18, characterised in that it comprises at least two parts having different thicknesses.

21. Part which can be produced using the method according to any one of claims 1 to 14, characterised in that it is a fitting for an electrical capacitor.

22. Part which can be produced using the method according to any one of claims 1 to 14, characterised in that it constitutes an electrical resistor.

23. Plate (51) which is intended to be incorporated in a printed circuit and which is constituted by a layer (53) of conductive material and a layer (52) of resilient polymer material, to which there is adhesively-bonded a passive electronic component part (54) which is cut from a laminated

strip, optionally comprising at least one additional electronic component which can be produced using the method according to claim 15 or claim 16.

24. Method for producing a passive inductive electronic component of the type comprising a part which is cut from a laminated strip constituted by a stack of thin metal strips of a magnetic alloy, characterised in that the part is produced using the method according to any one of claims 1 to 14 and at least one winding and coating of the component with a protective material are carried out.

25. Method for producing a passive electronic component which is capacitive or resistive, comprising a part which is cut from a laminated strip constituted by a stack of thin metal strips and means for electrical connection, characterised in that the part is produced using the method according to any one of claims 1 to 14 and the connection means are produced and the component is coated with a protective material.

26. Method for producing a printed circuit comprising at least one passive electronic component which comprises at least one part which is constituted by a laminated metal material, characterised in that there is stacked and adhesively-bonded at least one plate according to claim 23 and at least one plate comprising a layer of polymer material.